

# Successful Smoking Control as an Example of a Comprehensive Behaviorological Therapy

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[Based on the research of others and the author, this paper originated as lecture and discussion material (a) detailing how therapies can and should focus *comprehensively* on the problems, such as smoking, presented for therapeutic intervention, and (b) describing how explicitly *analyzing and addressing* the variables directly responsible for those problems appears to be substantially responsible for the success of some therapies.—Ed.]

Different therapies and interventions address different concerns. Those based on behaviorological science aim at analyzing and directly controlling the variables that are in explicit functional relations with the presenting problems. But other therapies try to deal with their concerns while ignoring the analysis and direct control of such variables. Instead these therapies focus on other variables that may relate, if at all, only indirectly to the relevant functional variables (although sometimes with a measure of adventitious success; see Fraley & Ledoux, 1997, Ch. 3). The benefits of the behaviorological approach include a greater likelihood of clinical success. Through a detailed examination of the reasons for the success of a particular therapy example, this paper suggests how success can be improved in other areas. The successful therapy used to exemplify these benefits is an early therapy that took a behaviorological approach in addressing the problem of smoking cigarettes.

## A Comprehensive Therapy

Professionals engaging in therapies that address cigarette-smoking problems can be sorted according to a particular criterion: They essentially guess what steps to have their clients take to try to stop smoking while also *adding new variables to control smoking behavior* (which usually takes the form of adding “The Record” of time since the last cigarette). Or they emphasize analyzing the variables explicitly responsible for the smoking behavior and take

steps to counter-control those variables directly. At the April 1973 convention of the Western Psychological Association, Joseph Morrow, Susan Gmiender, Lewis Sachs, and Helene Burgess (Morrow *et al.*, 1973) reported their design and evaluation of a therapy (a) that addressed (i.e., counter-controlled) the variables that explicitly generated and maintained smoking behavior, and (b) that showed a far higher success rate than other smoking-control therapies available at that time. They continued to use this therapy successfully in what amounts to an on-going replication. These authors attributed this success to several factors including, implicitly, what today would be called the general approach of behaviorologically analyzing and addressing variables with explicit functional control over the behaviors to be increased or decreased. For smoking control this involved designing, implementing, and evaluating techniques that directly counter variables that contribute to smoking behavior.

With that attention to the details of functionally relevant variables, therapies that take this behaviorological approach tend to address their target behaviors more comprehensively than therapies lacking this approach, and also tend to succeed. Hence this paper focuses (a) on the Morrow *et al.* therapy as an example of this successful kind of comprehensive therapy, and (b) on how the general behaviorological approach can benefit clients—in this example by reducing smoking behaviors. Through extension, this same approach will likely benefit people with other kinds of concerns, large or small.

Today, over twenty years later, therapists using more recently developed smoking-control therapies often incorporate one or more of the techniques that Morrow *et al.* used directly to address functionally controlling variables (which amounts to another type of replication of the techniques Morrow *et al.* used). However, some therapists do so not because a natural science (e.g., behaviorological science), informing their practices, has led them to do so, but because they have heard or recognized how effective these techniques are. These therapies are seldom founded on a scientific approach from which practitioners can derive effective techniques. The original Morrow *et al.* therapy—as old as it may be—is featured here because it was the earliest *comprehensive* smoking intervention that was founded on a scientific approach, the approach of behaviorological science, from which practitioners can and do derive effective techniques.

Other more recent “behavior analytic” smoking interventions also use the techniques that directly address functionally controlling variables because they share the behaviorological science that gave rise to these techniques. Over the years these interventions have had a substantial impact on US health policy (see Henningfield & Higgins, 1989, for the impact of these interventions on the Surgeon General’s report on some health consequences of smok-

ing). However, the development of these interventions goes beyond the scope of this paper; the point of this paper is not to encourage a particular approach to controlling smoking as much as it is to examine the substantial success rate of one early smoking control therapy to learn something that seems to be fundamental about what might be done in general to enhance the success of most efforts to improve the human condition.

The therapy described by Morrow *et al.* differs from most non-behavioral smoking-control therapies by treating smoking “as a learned behavior, not as a pathological symptom” (p. 7 [stand-alone page numbers in this paper are from Morrow *et al.*, 1973]). Morrow *et al.* instructed clients:

to look for environmental or situational “cues” for their urges to smoke, and, by recognizing these stimuli, manipulate their environment to ease “desires to smoke.” (p. 7)

The therapy by Morrow *et al.* also differs in three other fundamental ways from most smoking-control therapies, both behavioral and non-behavioral, with which it co-existed. Each such difference will receive attention: (a) This therapy demonstrates a higher clinical success rate than those therapies. (b) This therapy provides an extension in time, with a concomitant reduction in intensity, for formal therapeutic intervention. And (c) this therapy focuses on counter-controlling the explicitly analyzed functional variables of smoking while avoiding use of the added variable of the client’s “record” of time off cigarettes (on which many other smoking therapies tend ultimately to rely to control smoking). Some of these differences are also present with one or another more recent non-behavioral smoking therapy.

The overall strategy of Morrow *et al.* was to weaken the contingencies that produce smoking, while a more common overall strategy in other therapies has been to “add another variable” to treat smoking. The usual implementation of the latter strategy is to arrange a supplementary contingency to counter smoking such as a marked calendar that increasingly functions as a sort of reinforcer for the behaviors that are connoted by phrases like “not smoking” or “avoiding/resisting smoking.”

### **(a) Therapy Success Rate**

Perusal of the smoking-control literature reveals that the phrase “smoking-control therapy” covers many different interventions. All attempt to help clients stop smoking through a variety of separate or intermingled strategies.

Most of these therapies invoke aversive techniques, singly or in some combination, as the main method to bring the client’s cigarette smoking down to a low daily rate, even to zero. Such aversive techniques, which di-

rectly address only one or two of the variables functionally related to smoking, include using nausea-inducing drugs, electric shocks, horror stories and discussions of the diseases to which smokers are more susceptible than non-smokers, frightening films of surgeries needed because of smoking, gory slide-show or *in vivo* comparisons of tissues from smokers with tissues from non-smokers (e.g., healthy and diseased lung tissues in jars), depressing pictures depicting negative social stereotypes of smokers, ash trays shaped like open lungs, or emotional appeals about children wanting to imitate smoking parents and about children and others suffering from inhaling secondary smoke.

These therapies typically schedule the aversive techniques for the first week or two, or several weeks at most (which may be the full extent of the therapy). During this intervention period some therapists interact with their clients individually while others do so in groups. Some therapists meet with their client or clients once each day during this period while others meet only once or twice each week.

Regardless of all that variety, nearly all of these therapies are initially successful. By the scheduled end of the aversive technique period, nearly all clients have dropped their daily smoking rate to zero or nearly zero.

At the end of the scheduled therapy intervention, after the initial success, clients are on their own. But too many of them are inadequately prepared for developments still to come, even though they know what to expect. Morrow *et al.* described the problem:

All [subjects] reported that they had previously stopped smoking for some period of time, but began smoking again after allowing themselves what they believed to be “just one cigarette.” Apparently, this first cigarette, in response to strong [discriminative stimuli] in a particular environment, has a potent reinforcement effect which results in the [subject] returning to his previous smoking level in a relatively short period of time. (Morrow *et al.*, 1973, Appendix A, item viii)

To prepare clients to stay off cigarettes after their initial success, most therapies leave clients with only one fundamental controlling variable. This variable, which does *not directly* address the majority of variables functionally related to smoking, takes the form of their “Record” of how long they have gone without smoking a cigarette. But a single post-quitting cigarette breaks the record, and the smoking problem resumes.

Some therapists thus see the record of smoke-free days as a powerful but fragile variable. “How long have I gone without smoking? Six days!” Later: “Six weeks!” Later still (maybe): “Six months!” And even later (rarely):

“Six years!” The longer one goes without smoking, the more power the variable seems to exert. The problem with this variable is its fragility. Sooner or later, for most clients, too many stressors pile up on a particular day (e.g., a spouse gets upset over undone household chores, and the boss threatens to terminate and increases the work, and a broken pipe floods the basement, or the family’s teenager crashes the car). The result is that the otherwise successful quitter smokes a single cigarette. And then, usually, more cigarettes. “How long since my last cigarette? Just six minutes? My record [of weeks or months or years] is wrecked. I might as well have another cigarette!” The unbroken record, so powerful while unbroken, is erased.

After engaging in therapies that leave control over smoking to that record, clients end up acting as though they can never, indeed must never, have another cigarette. This is not true. In terms of health, any single cigarette probably causes less damage than taking a long walk on a summer afternoon in a smog-polluted city. A single cigarette after—perhaps long after—quitting, may be a powerful inducement to return to smoking, but that return *is* avoidable (see Morrow *et al.*, 1973). The erasing of the record, however, which a single post-quitting cigarette accomplishes, can be a powerful inducement to return to smoking. Since that cigarette is nearly inevitable whether or not a client is relying on such a record, its very use as a controlling variable may be seen as undercutting continued success.

As a result of the fragility of the record variable, nearly all therapies that rely on it show a low, long-term clinical success rate:

Within a few weeks the majority of quitters are back at original rate and within a year there is scant evidence that the few remaining abstainers differ in number from “spontaneous” quitters. (p. 1)

That low success rate produces adverse effects. Clients’ self-esteem aside, not only have they returned to smoking but also their efforts to quit have ultimately gone unrewarded making quitting yet again even more difficult to attempt. The joke that “it’s easy to quit smoking; I’ve done it hundreds of times” is not funny to smokers who have tried, and failed, to quit.

In contrast, the behaviorological smoking-control therapy featured in the Morrow *et al.* study shows a high, long term clinical success rate. Their study involved 55 clients, 25 women and 30 men. Ages ranged from 28 to 65 years. Initial smoking age ranged from 13 to 28 years. The number of years that these clients had smoked ranged from 9 to 45 years. The daily rate of cigarette smoking at the start of the study ranged from 15 to 60 (three-quarters of a pack per day to three packs per day). As with clients in other smoking-control therapies, these clients all

ceased smoking, as scheduled, by the end of the initial week of therapy. Overall, of the 55 clients starting the program, 34 (or 62%) were not smoking one year later. However, the therapy consisted of two sequential components, one individual-based (that first week) and the other group-based (three months of weekly meetings). So Morrow *et al.* tracked long-term success rates separately (a) for those who did not complete both components and (b) for those who did complete both components. Their results show that 35 clients (64% of the 55 starting clients) completed only the first therapy component; of these, only 16 clients (46%) were still not smoking one year later (a recidivism rate of 54%). Their results also show that 20 clients (36% of the 55 starting clients) completed *both* therapy components; of these, 18 clients (90%) were still not smoking one year later (a recidivism rate of only 10%).

That is a clinical success rate which therapies seldom achieve (regardless of the presenting problems they face). To what might the success rate of this therapy be due? As the choice of names for the techniques they used will show, Morrow *et al.* implicitly suggested, and this paper explicitly suggests, that the success is due to the comprehensive, designed connection, based on a behaviorological analysis, between the therapy techniques and the variables functionally related to smoking. This paper makes that connection through an elaboration of the analysis by detailing the behaviorological process and procedures of this therapy, including how to get more clients to complete both therapy components and so increase their chances for long-term success.

### **(b) Therapy Process**

The process of this therapy contains two sequential components. The first involves daily individual sessions and the second involves weekly (and later, monthly) group sessions. (Descriptions of all the self-control techniques, which are mentioned only by name in this section, are included in the “Therapy Procedures” section. Some techniques, such as satiation smoking, may at first seem like they would make smoking cravings worse, but on closer inspection they would not, and do not, have this effect.)

**Individual daily sessions.** In the therapy Morrow *et al.* describe, the first component is individual based. The client and therapist meet Monday through Friday for five daily sessions, each one hour long. These sessions have some activities in common, including these which occur each day: (a) The therapist collects the record of the number of cigarettes the client smoked in the previous 24 hours and praises drops in smoking rate (a part of valuable rapport establishment; in several different ways, more successful clients reported good rapport with their therapist—see Morrow *et al.*, 1973). (b) The therapist su-

pervises while the client engages in the technique called *satiation smoking* (a maximum of three “satiation cigarettes” per session). (c) The therapist and client discuss the previously introduced techniques and any difficulties the client may have experienced using them. (d) The therapist teaches the client any self-control techniques that are scheduled for introduction and together they work out and record the details of the client’s application of the techniques, taking the client’s particular circumstances into account. (e) The therapist provides any instructions relevant to the client’s efforts between then and the next session (e.g., any restrictions on smoking between sessions, and the need to continue to keep an accurate record of how many cigarettes get smoked between sessions). And (f) to a client’s doubts about his or her ability to succeed in quitting, the therapist responds with empathy for the difficulty the client is experiencing, expresses confidence, draws comparisons with similar clients who have quit smoking, and engages in other helpful verbal exchanges.

Each of the five individual daily sessions has some different activities also. These focus especially on the introduction of additional self-control techniques. (For details of therapist/client interactions regarding the common and different activities listed in this paper, see the “Therapist Manual” that accompanies Morrow *et al.*, 1973).

On Monday the therapist first stresses the importance of client cooperation if the client is to reach zero smoking by the end of the first week; the therapist’s role is to aid the client in reducing smoking so that non-smoking is possible between the Thursday and Friday sessions. Then the therapist teaches the client the technique called *satiation smoking*. The client smokes three satiation cigarettes during the session, using the client’s normal brand of cigarettes. The client intersperses these satiation cigarettes with learning the three self-control techniques called *pure activity*, *anti-social chair*, and *difficult to obtain*. The therapist also explains the purpose of these and later-introduced techniques in ultimately eliminating smoking. Clients may smoke normally as much as they wish between the Monday and Tuesday sessions, provided that they engage in all relevant self-control techniques which their therapist has introduced.

On Tuesday the client again smokes three satiation cigarettes, the first two of the client’s normal brand. The third is an unfiltered Camel provided by the therapist (if the client normally smokes Camels, the therapist provides an even stronger tasting brand imported from Asia). Between these satiation cigarettes, the therapist reviews previously introduced techniques, and introduces more self-control techniques. These include the techniques called *alternative behaviors*, *review emotional responses*, the filter-related part of *change cigarettes* (a two-step technique; the therapist will introduce the second step, the

brand-related part, at the next session), and *damage cigarettes*. Between the Tuesday and Wednesday sessions, clients may again smoke normally as much as desired provided that they engage in all relevant, introduced self-control techniques.

On Wednesday the client again smokes three satiation cigarettes. Only one is of the client’s normal brand; the other two are unfiltered Camels. Between these, the therapist reviews previously introduced self-control techniques, and introduces several more. The first two are for immediate use. These include the technique called *rehearsal of difficult times*, and the second, brand-related part of the two-step *change cigarettes* technique. The therapist also introduces the technique called the *quitter’s procedure* for later use. The therapist stresses the importance of getting the smoking rate down to the lowest possible level between this session and the next so that the client can more easily reach the zero rate between the Thursday and Friday sessions. To help reduce the rate to the lowest possible level, the client is to postpone smoking as long as possible. When the client does smoke, he or she is to engage all introduced self-control techniques while smoking that cigarette as a satiation cigarette (inhaling every six seconds using the seconds indicator on his or her clock or watch). Finally, the client is to destroy or give away all of his or her cigarettes just before the Thursday session.

On Thursday the client smokes only two satiation cigarettes, both Camels. For most of this session, the therapist emphasizes to the client the importance of going without cigarettes for the next 24 hours, and again reviews all the self-control techniques. As part of that review, the therapist advises the client on managing any problems experienced in the application of those techniques. As an aid to abstaining, the client can look forward to smoking only one satiation cigarette at the Friday session. And from now on the client is to use the technique called the *quitter’s procedure* for any cigarette he or she smokes.

On Friday, the last individual session, the therapist allows the client to smoke one satiation cigarette (a Camel). Having abstained for 24 hours already, most clients experience great discomfort over this cigarette; should they so chose, they need not complete it. The client and therapist review what the client has been through and discuss what the client might experience in the adjustment to non-smoking. In the rest of this session, the therapist describes to the client the scheduling, purposes, and benefits of the upcoming weekly (and later, monthly) group sessions.

Virtually all clients achieve zero smoking between the Thursday and Friday individual sessions. Something akin to a shaping process usually occurs as they extend this one-day success to three days by abstaining from the Fri-

day individual session to the first group session scheduled for the following Monday, and then from this first group session to the next one a week later, and so on.

**Group sessions.** The second therapy component is group based. The therapy Morrow *et al.* describe continues with eleven weekly group meetings spread over three months. Each group meeting is of two hours duration, and is usually held on Monday evenings. The group is comprised of clients who have completed the individual-therapy sessions. At any particular meeting some clients may be attending for the first time, others for the last time, and most somewhere between these points.

At each group meeting similar activities take place. In an informal atmosphere of healthy beverages and snacks (No smoking!) clients introduce themselves, state how long ago they quit smoking, and describe any problems they are encountering or what topics they would like to see the group discuss. Together they discuss events in their lives related to smoking, the difficult situations they described facing, and how to handle these. Thus each client can benefit from the experience of the others. When they exhaust smoking-related subjects, they are free to discuss any other topics of mutual interest. In these ways they bond together into a mutual support group of non-smoking friends (the first and often the only such friends some clients have) who have had similar quit-smoking experiences. For some clients these friendships and social contacts endure on their own after the end of formally scheduled meetings (a variable whose contribution to client success is difficult to assess).

The therapist keeps the group focused and provides verbal reinforcement when applicable. Should a client need additional help, the therapist works out an appropriate individual program with that client.

### (c) Therapy Procedures

The therapy Morrow *et al.* describe employs a particular set of procedures for the client to use. Most of these are self-control techniques that can be found, in general and specific ways, in the literature (e.g., Skinner, 1953; Stuart & Davis, 1972). The differentiation among these techniques derives in part from the relation between each technique and a particular variable functionally related to smoking, and in part from the convenience thereby afforded in simplifying the presentation of the techniques to clients. Also, based on the author's work with clients, this paper further subdivides the techniques, so some names differ from those used by Morrow *et al.*

Morrow *et al.* specifically designed each technique to counter one or another of the variables, or variable components, explicitly controlling smoking. These variables fall under four headings, each of which will receive attention: (a) *antecedent stimulus variables* involving respondent aversive and other emotional considerations as well

as discriminative stimulus considerations, (b) *response considerations*, (c) *postcedent stimulus variables* involving conditioned and unconditioned reinforcement, and (d) *the combination of variables* when clients are "on their own" during and after the second, group-based component of the therapy.

**Antecedent stimulus variables.** Four techniques address antecedent stimulus variables. One addresses aversive respondent variables. One addresses other emotional respondent variables. And two address two different types of discriminative stimuli.

The therapy technique called *satiation smoking* is the aversive respondent technique in this therapy. In this technique, the client inhales on a cigarette every six seconds. As the rate of smoking outside the sessions decreases, satiation smoking becomes increasingly uncomfortable. While the aversive effects are temporary, clients may extinguish a satiation cigarette if they find it too uncomfortable.

The therapy technique called *review emotional responses* addresses respondent emotional variables. In this technique clients list (on a card that they carry with them) all their reasons for quitting smoking and for not smoking. As time passes clients remove from the list any reason that fails to elicit the appropriate, strong emotional reaction. Examples could be feeling pleasure elicited by a positive reason for ending smoking (e.g., pleasure at being able to smell flowers again) or feeling fear elicited by a negative reason for ending smoking (e.g., fear that the client's toddler might play with the cigarette lighter). Clients also add to the list reasons newly discovered to elicit appropriate emotional reactions. They attempt to increase the anti-smoking effects of the reasons on the list by reading the list before engaging in reinforcing activities such as eating a meal. Therapists instruct their clients to review the list several times each day during the week of individual sessions. In reviewing the list they should focus on each reason until it elicits the relevant emotion. They also review the list as part of the quitter's procedure. This technique is needed to replace old emotional ties operating to support smoking with new emotional ties operating to support non-smoking.

Two other therapy techniques address discriminative stimuli. Even though both decrease in relevance as clients progress past the initial cessation of smoking, both play valuable roles in bringing about that initial cessation.

One discriminative-stimulus focused technique is called *difficult to obtain*. In this technique clients put their cigarettes and matches in places that are separated in space as much as reasonably possible. The locations should necessitate additional response effort, such as bending over, to retrieve an item. This makes satisfying an urge to smoke more difficult (see Ledoux, 1973, for research support of the response status of urges to smoke).

For example, at home the cigarettes might be kept in a chest in an upstairs bedroom (with the TV located in the downstairs living room) while the matches might be kept on a high shelf in the basement. Should an urge to smoke occur during a TV program, the increase in time and effort required to obtain the needed items is likely to preclude the actual occurrence of smoking at that time. The inconvenience is often simply too great to bother with; clients report saying to themselves such things as “Do I really want to bother going and getting those things [cigarettes and matches] right now? No. If I must smoke, I’ll just smoke later.” The difficult-to-obtain technique is needed because the normal proximity of cigarettes and matches, to the client as well as to each other, affords these items a detrimental level of evocative power, as discriminative stimuli, over smoking. Little, if any, more is needed to get a smoker to light up a cigarette. A smoker reaching into a shirt pocket for paper and pen to write down a telephone number advertised by a commercial on TV would, upon finding a pack of cigarettes also in that pocket, likely light up.

The other discriminative-stimulus focused technique is called *rehearsal of difficult times*. In this technique the client makes special arrangements with everyone from whom he or she might receive cigarettes. For one day (the day immediately after this technique is introduced) all these people are to offer cigarettes unexpectedly to the client. The client is never to accept an offered cigarette but instead is to practice saying “no” to the offers. Clients who experience an excessive urge to smoke are to get their own cigarettes under already introduced techniques. Morrow *et al.* sometimes made quite specific not only their analysis of the relation between a technique and a smoking-controlling variable but also the occasions for the use of the technique. Rehearsal of difficult times allows:

...the discriminative stimuli... to occur in certain situations, which previously had always resulted in the response, without allowing the response to occur. In the present study, this procedure was recommended to all subjects who had a spouse who smoked and from whom they had often accepted cigarettes, or who frequently had “bummed” cigarettes from others in the past. (Morrow *et al.*, 1973, Appendix A, item vii)

The rehearsal of difficult times technique is needed because most smokers find saying “no” when someone offers a cigarette to be very difficult, especially given the price of cigarettes. Some report *never* having said “no” under such circumstances. Under conditions of deprivation during and after stop-smoking therapy, saying “no” is likely to be all the more difficult. The rehearsal of difficult times techniques enables the client, under contrived but also

controlled conditions, to practice saying “no.” Having said “no” at least in the past under relevant stimulus circumstances, clients find saying “no” easier when they are later faced with a real need to say “no.”

**Response considerations.** The therapy technique called *alternative behaviors* addresses the problems associated with the response status of smoking. In this technique the therapist helps the client construct a list of alternative behaviors in which the client is increasingly to engage as smoking decreases. For this list many clients emphasize past activities, such as hobbies or skills, in which they no longer engage but to which they would like to return. (The cessation of smoking may even make some preferred activities affordable.) Morrow *et al.* provided these details:

They are asked to include at least three activities in each of three categories: physical activities (such as jogging, bike riding, gardening, walking, etc.); quiet activities (i.e., crossword or jigsaw puzzles, sewing, arts and crafts, carpentry, reading, etc.); and oral activities (such as sucking, chewing or biting on lemon drops, life-savers, gum, celery, fruits, various non-toxic objects, etc.). (Morrow *et al.*, 1973, Appendix A, item iv)

The alternative behaviors technique is needed because behavior does not occur in a vacuum; it occurs in time. For smokers, smoking behavior fills part of each day. As smoking drops through therapy, more of each day becomes behaviorally empty. If no plans are made to fill this time by design with beneficial activities, then troublesome activities may fill it by accident. Extra eating is a common, undesirable replacement. Many people who have quit smoking have reported an increase in eating, and consequently weight. The origin of such problems may reside in the normal behavioral process of response generalization, in this case from one consumption response class to another. The alternative behaviors technique fills this time by design.

**Postcedent stimulus variables.** Four therapy techniques address the reinforcing capacity of cigarettes and smoking. All work to weaken that capacity. The first two focus on counter-controlling *conditioned* reinforcing capacity. The other two focus on counter-controlling *unconditioned* reinforcing capacity. These four techniques are needed to help counter any continued generation and maintenance of smoking due to its reinforcement value, for this value probably constitutes the most powerful of the variables responsible for the behavior of smoking. (The unconditioned reinforcing capacity of nicotine may be more powerful for most smokers than any conditioned reinforcing capacity of cigarettes or smoking. However, since the therapist usually cannot be sure if a client trying to quit

is more affected by unconditioned reinforcers or by conditioned reinforcers, both deserve therapeutic attention.)

One of two techniques focused on *conditioned*–reinforcement is called *pure activity*. Normally a smoker engages in other activities while smoking. This pairs the *physical* (and social) stimulus components of these activities with cigarettes and smoking, which establishes some of the conditioned reinforcing capacity of cigarettes and smoking. The pure activity technique counter–controls much of this normal, automatic pairing of physical reinforcers with smoking, for a pure activity is one that lacks connection with any previously associated physical reinforcers. In this technique, when clients smoke, that is *all* that they do; they engage in no other activities while they smoke. That means, for instance, no television viewing, no stereo listening, no drinking, no eating, no window gazing, no reading, no driving, no studying, no dancing, and no socializing. This technique thus reduces some of the conditioned reinforcement value of smoking, because it stops the pairing of smoking and most other physical reinforcers.

The other technique focused on conditioned–reinforcement is called *anti–social chair* (sometimes called “smoking spot”). Engaging simultaneously in smoking and social activities, a common occurrence, also pairs the *social* stimulus components of those activities with smoking. This again increases and maintains some of the conditioned reinforcement value of smoking. The anti–social chair technique extends the pure activity technique by counter–controlling much of this normal, automatic pairing of social reinforcers with smoking. In this technique the therapist and client discuss locations, suitably isolated from the normal social environments, that the client can use as smoking spots where he or she will be *alone* when smoking. Consistent with the pure activity technique, these are locations where the client can keep a chair to be used exclusively for smoking. (The overlap of the pure activity technique and anti–social chair techniques is not an issue.) The client selects one spot for use at home and one spot for use at work. The client is not to smoke anywhere else; when away from these places, a public toilet is a suitable, anti–social smoking spot. Spots that some clients have chosen include spare rooms, bathrooms, stairwells, basements, attics, and garages. This technique thus further reduces the conditioned reinforcement value of smoking because it stops the pairing of smoking and most social reinforcers.

Morrow *et al.* kept the two techniques that are focused on the *unconditioned* reinforcement value together. They referred to the combination as *reduction of reinforcement value* because both shared in reducing this reinforcement value. Here these two techniques are described separately.

One of the two techniques focused on reducing unconditioned–reinforcement is called *change cigarettes*. In

this technique clients change their cigarettes in two steps. The first step is filter–related. At the scheduled session, clients who smoke filtered cigarettes remove the filters, making the cigarettes aversive (or “distasteful,” as clients describe them). Clients who smoke unfiltered cigarettes change to a filtered brand. The second step is brand–related. At the next session all clients change to a strong unfiltered brand, making the cigarettes even more distasteful. Thus the clients’ actions changing the cigarettes offset some of the unconditioned reinforcement value of smoking by making smoking increasingly aversive.

The other technique focused on reducing unconditioned–reinforcement is called *damage cigarettes*. In this technique clients damage their cigarettes by poking pin holes in them (a minimum of five pin holes) or by water–logging them, or both. Damaging the cigarettes in any of these ways before smoking them makes them distasteful. Thus the clients’ action of damaging the cigarettes also offsets some of the unconditioned reinforcement value of smoking by also increasing the aversiveness of smoking.

(Used alone, these techniques might condition clients to tolerate stronger cigarettes. But clients, working on many smoking–control techniques concurrently, are observed by therapists to reduce smoking, not to tolerate smoking stronger cigarettes.)

**The combination of variables.** The therapy technique called the *quitter’s procedure* addresses the combination of variables *after* the client has completed the one–week, individual–based therapy component. During this period some previously introduced techniques stand alone (e.g., the alternative behaviors technique that continues whether or not other techniques are in use) while others are no longer relevant to the client’s efforts (e.g., the difficult–to–obtain technique since the client no longer owns cigarettes). The quitter’s procedure combines all remaining, relevant techniques in a way that avoids clients having to rely on an “it’s been x amount of time since the last cigarette” record that verbally implies falsely to them that they can never again have another cigarette. Instead the quitter’s procedure allows future cigarettes but only under specific, rate–reducing controls.

Morrow *et al.* designed the quitter’s procedure so that successful clients need not fear falling for the temptation to have a post–quitting cigarette.

This technique was developed in response to the expressed fear of (subjects) that they would again return to smoking if and when they ever had a cigarette after they quit, and their expressed inability to stop smoking if that meant they never, under any circumstances, could have another cigarette. (Subjects) were told that they could have a cigarette, after a period of zero smoking, which would satisfy

their urge to smoke while at the same time making the smoking response so aversive that the probability of emitting the smoking response would not be increased... (Morrow *et al.*, 1973, Appendix A, item viii)

Therapists describe the quitter's procedure to clients, in lay language, as a series of steps. These become successively more difficult so as to counter increasingly strong urges to smoke. In the quitter's procedure, when an urge to smoke occurs, clients face a series of what may conveniently be called choice, or decision, points.

Prompted by an urge to smoke, the first decision point occurs after clients initially observe and report to themselves (as a "public of one"; see Ledoux, 1973) their own momentary high probability of smoking. (For the level of discourse in this paper and with clients, this can be more simply, though less accurately, described by saying that clients verbally decide whether or not to smoke a cigarette.) Throughout therapy clients come to understand the fact that smoking has causes. After experiencing an urge to smoke, verbal responses regarding both the recollection of this fact and the realization that one or another cause is currently operating to make the client smoke are often adequate to prompt the further verbal, self-instructional response, and compliance behavior, of a decision not to smoke.

If the decision is to smoke, then the second decision point occurs after clients leave the immediate situation in which they decided to smoke. One stimulus or another has exerted enough control while they were in that environment to evoke the decision to smoke; the first step in weakening that control is to move away from that environment. Once in another setting they are to consider again whether or not to smoke. Simply changing environments is often adequate to prompt compliance with the verbal self-instruction not to smoke.

If the decision still is to smoke, then clients are to review their emotional responses list. The third decision point occurs after this is done when they again consider whether or not to smoke. Reviewing this list is often adequate to prompt compliance with the verbal self-instruction not to smoke.

If the decision to smoke continues, then other decision points occur both before and after clients walk, if possible, to a store where they might *buy* a pack of cigarettes, since they do not own or "bum" any. But before walking or buying, they review the final sequence of the quitter's procedure; they review what they must do *if* they let stand the decision to smoke: (a) They must buy an expensive pack of specified, strong tasting, unfiltered cigarettes. (b) They must trash 19 of the cigarettes from the pack right then at the store (because they had an urge to smoke only one cigarette, and keeping the other 19 would

only provide them with 19 more temptations). And (c) they must take the remaining cigarette to an agreed upon smoking spot where they must put pin holes into the cigarette and/or waterlog it before smoking that cigarette as a satiation cigarette! Having reviewed what they must do in the final sequence of the quitter's procedure, they again consider whether or not to smoke. Reviewing this final sequence, experiencing the aversive emotional reaction to it, is often adequate to prompt compliance with the further verbal self-instruction not to smoke.

If the decision to smoke stands, then the client buys a pack of the specified brand of cigarettes and continues through that final quitter's procedure sequence (why clients follow these rules is discussed later). By completing the quitter's procedure, the client has satisfied the urge to smoke but has not reinforced smoking. (See Morrow *et al.*, 1973, for more detail and the rationale on the parts of the quitter's procedure.)

One other factor bears on the continued successful application of the quitter's procedure. As part of the discussions on this procedure, therapists also repeatedly remind clients that smoking a post-quitting cigarette in any way other than through the use of this procedure (or using the quitter's procedure too often) carries a high probability of returning to smoking.

The quitter's procedure is needed because virtually everyone who has smoked and quit can expect to experience an occasional urge to smoke. Presumably one or another as yet unaddressed smoking-evoking variable has momentarily raised the probability of smoking. (Some of these variables are essentially unaddressable. For example, only a very rare client would have the authority to ban, say, cigarette vending machines from all of the places he or she ever encounters. Yet such a measure would be required if a person were to minimize the smoking-evoking stimulus control effects of these machines. Nevertheless, such measures are simply beyond normal reach.) Under these circumstances the quitter's procedure seems vital to continued success in non-smoking because it provides the client a way to "satisfy" urges to smoke while minimizing the reinforcers from smoking.

The quitter's procedure also increases the understanding of those who have never smoked regarding the extent of the problems faced by smokers who want to quit. The rigorous rate-reducing controls of the quitter's procedure surprise many of these non-smokers who see such controls as extreme. They ask "How could anyone ever follow that procedure? How could they throw the money tied up in 19 cigarettes away, or take those other steps? Why would they put themselves through all that?" Smokers who quit through using the quitter's procedure provide the answer: They experience, in various ways, that the quitter's procedure works, so they follow it, finding this procedure to be an invaluable aid to successfully quitting

smoking. Most smokers find the prospect of never again having another cigarette to be a virtually impassible barrier to successful quitting. Yet those who have used the quitter's procedure to stop smoking have shown, through their compliance with it, that using this procedure is easier than never ever again having another cigarette.

**A summary table.** Table 1 summarizes the self-control technique information. The name of each technique appears in relation to the type of variables it addresses and the session at which it is introduced.

### A Partial, Small Scale Replication and Extension

After using the Morrow *et al.* therapy with a group of clients in Australia in the late 1970s, the author had occasion to work with a small number of American clients (about half a dozen) who hoped to quit smoking in the early 1980s. While the procedures for most of the author's clients were basically identical to those Morrow *et al.* used with their clients, the process differed.

One difference in process concerned the number of meetings after the daily sessions. Interested in reducing the recidivism rate found in their study, Morrow *et al.*

recommended that clients continue attendance at group meetings on a monthly basis for nine more months. This schedule would extend therapy duration to a full year, while increasing the interval between meetings through an additional step (daily to weekly to *monthly*). Such a schedule more gradually reduces—compared to the original Morrow *et al.* study—the therapist's part in the contingencies generating and maintaining clients' efforts to quit smoking. This gradual reduction in reliance on the therapist (akin to a fading procedure) seemed to contribute to clients' success when the therapy was completed and they proceeded independently. Based on preliminary evidence of benefits to clients, this practice seemed to contribute to reducing recidivism.

The author implemented this recommendation. But his clients were not numerous enough at any one time to meet as a group. However, they did meet individually with the therapist about 20 more times over a full year. The first eleven meetings occurred once each week over about three months, and the remaining nine meetings occurred once each month. To the extent possible these meetings covered the same ground, and served the same purposes, as the group meetings in the Morrow *et al.* study.

Another difference between the process for the author's clients and the process for clients in the Morrow

Session	Variables		
	Antecedent	Response	Postcedent
Monday	<ul style="list-style-type: none"> <li>✦ Satiation smoking</li> <li>✦ Difficult to obtain</li> </ul>		<ul style="list-style-type: none"> <li>✦ Pure activity</li> <li>✦ Anti-social chair</li> </ul>
Tuesday	<ul style="list-style-type: none"> <li>✦ Review emotional responses</li> </ul>	<ul style="list-style-type: none"> <li>✦ Alternative behaviors</li> </ul>	<ul style="list-style-type: none"> <li>✦ Change cigarettes (filter part)</li> <li>✦ Damage cigarettes</li> </ul>
Wednesday	<ul style="list-style-type: none"> <li>✦ Rehearsal of difficult times</li> </ul>		<ul style="list-style-type: none"> <li>✦ Change cigarettes (brand part)</li> <li>✦ Quitter's procedure (only introduced)</li> </ul>
Thursday			<ul style="list-style-type: none"> <li>✦ (Quitter's procedure—begin use)</li> </ul>

**Table 1.** Names of self-control techniques by the type of variables addressed and the session at which introduced.

*et al.* study concerned special fees. These were fees that also related to the recurring concern about recidivism. To reduce recidivism in their smoking-control therapy, Morrow *et al.* suggested another strategy besides extending meetings from weekly to monthly intervals. Based on their preliminary data, they also suggested that recidivism would likely decrease if therapists required each client to pay a special fee that would be refunded if, and only if, the client had attended nearly all therapy meetings regardless of whether or not the client had quit smoking. They suggested that making the refund contingent on attendance rather than on success might reduce the chance of clients quitting therapy; this should increase the likelihood of their quitting smoking. Given the money that quitting smoking saves (even after paying the therapist's regular fees) this special fee strategy was easy to institute. In addition, some clients saw the refund as a nice bonus for their successful efforts. The author implemented this recommendation also.

Compared with the Morrow *et al.* results, do longer therapy duration, or more gradually increasing the interval between meetings, or instituting special fees, work well for individuals or for groups? These are questions for further research as the limited data available at present are insufficient to provide an answer for them.

Only one of the author's clients can serve here as an example, since over the last ten years he has been able to keep in touch with only one of them. Even this has usually been through the accidental and occasional contact (e.g., spotting her in a grocery store about once each year). Even this type of contact was possible only because this client has remained in the "local" rural area, although residing about 20 miles from the author's residence. She has granted permission for her data to be reported here. (Clients had originally been told that their data was being collected solely for therapeutic purposes. No others could be reached regarding permission to use their data. So, except to point out that her success is typical of the other clients, nothing more will be said about their data.)

The one client whose data can be used was one of those who paid a special fee of \$50 that she did earn back solely by meeting the therapy contact requirements. She also quit smoking. Her characteristics showed her to be similar to the clients in the Morrow *et al.* study. Smoking just under one pack per day, she began smoking-control therapy at age 41, having begun to smoke 22 years earlier at age 19. She had twice previously tried to quit. After seven years of smoking, she tried "Bantron" for one week (although she is unsure, she recalls that this was a gum for controlling smoking). Five years later she tried special smoke-reducing filters for one month. Another ten years passed before she tried quitting again, this time with the therapy discussed here.

Her data show a pattern similar to that of the successful clients in the Morrow *et al.* study. Due to the 40-mile round trip required to meet with her therapist (and the long winters along New York State's border with Canada where that driving took place) her "daily" sessions had to be spaced two to four days apart. Nevertheless, she achieved zero smoking by the fifth therapy session in early March 1985. Due again to that driving distance, she continued in contact with her therapist by telephone once or twice each week for 15 weeks. In June 1985 the phone contacts became monthly until formal contacts stopped a year later in July 1986. At that time she had not resumed smoking. A formal follow-up in June of 1987, one-year after therapy ended (and over two years after therapy had started) found that she had still not resumed smoking. In early 1990, nearly three years after the formal follow-up and while preparing to be away for a year (teaching abroad), the author checked again and found that no return to smoking had occurred. At this point she had not smoked for over four years.

Two developments in this client's experience may be of interest to therapists and others. One development concerned the client's bowling once each week. From the time she achieved zero smoking to the end of the bowling season that year (in September), she found that the only occasion that was difficult for her to handle was bowling night. The situation presented great pressure to be sociable and to smoke. Sometimes she resisted successfully and other times she required a slightly modified quitter's procedure cigarette: no anti-social chair was available (she had to be present to take her turn). In spite of these difficulties, she did not return to smoking.

The other development that may be of interest concerns the circumstances around which she *did* once return to smoking. In July of 1996, while recomposing lecture materials to form this paper, the author had checked with this client for permission to use her data and found that some problems had occurred, and been resolved, in the years after he left for the year abroad. (As could happen, no contact had occurred in the years between his return and her resolution of the problem).

In mid-1990 the client experienced an overload of stressors. Her mother-in-law suffered a stroke, and died a couple of months later. She began smoking again when the stroke occurred. By the time of the death, she was back to a pack per day. This rate maintained until December 1993 when she became ill with pneumonia. Upon recuperation she found herself reinstituting many of the self-control techniques from her previous experience with the therapy. This action reduced her smoking rate again to zero in a matter of weeks. She has not smoked since then. [At a further followup in February 2007, she reported that she was still not smoking.—Ed.]

These data, from only one client, while enticing for what one might hope they say about the therapy as conducted by the author, are clearly insufficient to answer any questions about the particular changes, from the Morrow *et al.* processes, upon which the data are based. On the other hand these data do not contradict the data reported by Morrow *et al.* In their own limited way, these data provide a small measure of support for the conclusions of both Morrow *et al.* and this author.

## Conclusion

The smoking-control therapy used by Morrow *et al.* and the author *provides an example* of a therapy that addresses its concerns comprehensively, is successful, and is theory based in that it derives its practices from established behaviorological principles. Its substantial clinical success rate shows this therapy to be a valuable example of how the general approach of behaviorologically analyzing *and addressing* explicit functionally controlling variables can benefit clients, in this case clients with smoking problems. Extension of these characteristics to many other kinds of concerns, large or small, will likely enable people with those concerns to attain similar success rates. ☺

## Endnotes

This paper achieved final form both for presentation at the ninth annual convention of The International Behaviorology Association in Plymouth, MA, March 1997, and for inclusion in *Origins and Components of Behaviorology* ((Ledoux, [1997/2002])).

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